Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Petition of Aviation Spectrum Resources, Inc.	)	WT Docket No. _____
for Waiver of Sections 87.173(b) and 87.263(a)	)	
of the FCC's Rules to Allow Use of the Lower	)	
136 MHz Band by Aeronautical Enroute	)	
Stations	)	

PETITION FOR WAIVER OF AVIATION SPECTRUM RESOURCES, INC.

Aviation Spectrum Resources, Inc. ("ASRI")[1] petitions the Federal Communications Commission ("FCC" or "Commission") for waiver of Sections 87.173(b) and 87.263(a) of the Commission's rules to allow use of the 136.000 – 136.4875 MHz band (the "lower 136 MHz band") to support the growing use of both the aviation industry's and the Federal Aviation Administration's ("FAA") datalink communications using FCC-licensed Aeronautical Enroute Service ("AES") stations. The waiver will allow ASRI to use these frequencies to provide aeronautical operational control ("AOC") and air traffic control ("ATC") data communications to aircraft using VHF Datalink Mode 2 ("VDLM2"), an advanced digital protocol already in use by ASRI-licensed ground stations in the 136.500-136.975 MHz band (the 'upper 136 MHz band"). This will improve safety, efficiency, capacity, predictability, and

[1] ASRI is owned by U.S. airlines and other airspace users and manages Aeronautical Enroute Service on behalf of the U.S. air transport industry. Formerly part of ARINC, ASRI also sponsors the Aeronautical Frequency Committee and advises the membership on the development of international and domestic aviation spectrum policy, as well as participating in International Telecommunication Union and the International Civil Aviation Organization spectrum committee activities. More information is available at https://www.asri.aero/about-us/.

resiliency of American aviation, consistent with the FAA's Next Generation initiative ("NextGen") to modernize the air transportation system.[2]

The use of datalink messages to augment existing ATC voice messages forms a core component of the NextGen program. Known as the Data Communications Program ("Data Comm"), it will transition ATC communications from an analog voice-only system to a system that relies primarily on digital communications with voice available upon request in exigent circumstances. Based on the existing aviation industry VDLM2 networks, Data Comm has already been implemented nationwide for ground-based operations in the 136.500-136.975 MHz band with high success (see Appendix A).[3] With the system now starting to incorporate aircraft in the enroute phase of flight, having the network capacity to accommodate this new ATC traffic will be critical as more aircraft begin to use the system. Therefore, prompt implementation of VDLM2 stations in the lower 136 MHz band is essential to meet growing aeronautical communications needs.

I. INTRODUCTION AND BACKGROUND

Data Comm is a joint partnership between the aviation industry and the FAA using the existing industry VDLM2 networks, which are under contract to the FAA through Harris Corporation. Data Comm transmissions use AES ground stations licensed to ASRI and operated by Collins Aerospace (formerly ARINC/Rockwell Collins) and SITAONAIR. The FAA and the industry have already launched Data Comm on VDLM2 networks in the 136.500-136.975 MHz band using stations licensed to ASRI to provide departure clearances at over 62 airports across

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[2] *See* FAA, NextGen, https://www.faa.gov/nextgen/ (last visited Jan. 2019).

[3] Channels are assigned on the basis of 25 kHz spacing. As such, the lowest frequency employed currently for AES stations in the 136 MHz band is centered at 136.500 MHz. The channel bandwidth spans 136.4875 to 136.5125 MHz.

the country.[4] With tower services operational, the FAA plans to expand the program to include enroute services to aircraft in flight nationwide by 2020 and to complete full deployment by 2023.[5]

VDLM2 is a bit-oriented data link technology capable of transmission rates more than ten times faster than predecessor technology, and combines AOC and ATC data onto a radio channel between an aircraft and a ground station with prioritization for safety and time-sensitive messages such as ATC commands.[6] This flexible, scalable, and time-based management system is transforming AOC and ATC communications, using spectrum more efficiently and enhancing the delivery of important aviation communications.

To accommodate the growing spectrum bandwidth needs of the aviation industry and ensure the safe operation and navigation of our nation's aircraft, industry must have the ability to operate VDLM2 across the entire 136 MHz band. Although Data Comm has been successfully deployed for ground operations in the 136.500 – 136.975 MHz band, existing FCC rules do not allow AES VDLM2 stations to be assigned in the 136.000 – 136.4875 MHz band. Specifically, Section 87.173(b) limits use of the lower 136 MHz band to "air traffic control operations," effectively prohibiting the shared ATC and AOC on the same channels that are a fundamental

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[4] FAA, Data Comm in Operation, https://www.faa.gov/nextgen/how_nextgen_works/new_technology/data_comm/in_depth/ (last visited Jan. 2019).

[5] *See* FAA, Data Communications At a Glance, https://www.faa.gov/nextgen/how_nextgen_works/new_technology/data_comm/ (last visited Jan. 2019).

[6] AOC communications support aircraft safety, efficiency, and economic operation though the transmission of weather, fuel, aircraft performance, and other pertinent information. Industry transmits AOC communications using AES stations licensed by the FCC. ATC communications, which are provided by the FAA, facilitate the safe, orderly, and expeditious flow of aviation traffic. The FAA has historically provided VHF ATC communications through government ground stations using voice systems.

component of Data Comm.[7] Additionally, Section 87.263(a) does not include the lower 136 MHz band in its list of frequencies available for AES.[8]

ASRI filed a Petition for Rulemaking in October 2018, which remains pending before the Commission, to amend Sections 87.173(b) and 87.263(a) of the FCC's rules to allow AES operations for both ATC and AOC in the lower 136 MHz band.[9] ASRI explained in its Petition for Rulemaking that it will need access to this spectrum by the end of 2019 to meet the growing demands of the FAA's Data Comm program, including plans to begin the launch of enroute services nationwide by 2020. As noted, *infra*, the petition and its proposals drew widespread and full support from the aviation community with no opposition comments filed.[10]

Given this timeframe, ASRI respectfully requests the FCC to waive Sections 87.173(b) and 87.263(a). Any future rulemaking proceeding on this matter could take a year or more to complete and ASRI estimates it will take at least six months to procure, integrate, and test new Data Comm enroute stations. A waiver would, therefore, allow ASRI to deploy VDLM2 in the lower 136 MHz band pending FCC action on ASRI's Petition for Rulemaking.

II. GOOD CAUSE EXISTS TO WAIVE SECTIONS 87.173(b) AND 87.263(a) OF THE COMMISSION'S RULES TO ENABLE DEPLOYMENT OF VDLM2 IN THE LOWER 136 MHZ BAND.

Sections 87.173(b) and 87.263(a) of the FCC's rules prevent the operation of Data Comm networks in the lower 136 MHz band using the transformative VDLM2 technology by not

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7 47 C.F.R. § 87.173(b).

8 *Id.* § 87.263(a).

9 Petition of Aviation Spectrum Resources, Inc. for Amendment of Sections 87.173(b) and 87.263(a) of the FCC's Rules to Allow Use of the Lower 136 MHz Band by Aeronautical Enroute Stations, RM-11818 (filed Oct. 16, 2018).

10 Supporting comments were filed by the Air Line Pilots Association, ASRI, Collins Aerospace, Delta Airlines, Harris Corp, JetBlue Airlines, SITAONAIR, and United Parcel Service

permitting Aeronautical Enroute Service stations to be licensed in the lower band. The Commission may grant a waiver of its Part 87 rules, upon a showing that "the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest" or that "[i]n view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative."[11] Both sets of criteria are clearly met here.

A. Grant of the Instant Waiver Will Fulfill Commission Intent, Not Frustrate Commission Policy.

When providing priority to ATC messages, transmission of both AOC and ATC communications across the entire 136 MHz band is consistent with the FCC's intent for and allocation of the band. In 1990, the FCC allocated the 136 – 137 MHz band to non-government Aeronautical Mobile (R) services, and adopted a band plan allocating various frequencies within the band for specified communications.[12] Accordingly, twenty channels comprising the upper 136 MHz band were made available for AES, and the twenty channels comprising the lower 136 MHz band were made available for "general aviation uses" such as automatic weather observation service ("AWOS"), automatic terminal information service ("ATIS"), and air-to-air corridor advisory and airport control tower communications.[13] Reasoning that many of these

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11 47 C.F.R § 1.925(b)(3).

12 *Amendment of Parts 2 & 87 of Commission's Rules to Permit the Aviation Services to Use Frequencies in the 136-137 MHz Band*, Report and Order, 5 FCC Rcd 3954, ¶¶ 10, 32 (1990) ("*First 136 – 137 MHz Band Order*"). This domestic allocation followed the 1979 World Administrative Radio Conference, which first allocated the 136 – 137 MHz band for "Aeronautical Mobile (R)" service on a primary basis to reserve global spectrum primarily for digital aeronautical VHF communications technologies. *Id.*, ¶ 2.

13 *Id.*, ¶ 32.

"general aviation" services "may be provided by either Government (FAA) or non-Government facilities at any given location," the Commission also revised footnote US244 to the Table of Frequency Allocations to allocate the whole 136 MHz band for non-government use on a primary basis, with channels in the lower 136 MHz band available to the FAA on a shared basis.[14]

In 2001, the Commission rejected an FAA request to reallocate the band to government use on a primary basis, reaffirming its intent that the 136 MHz band be available for both AOC and ATC communications. Specifically, the Commission stated that it should "accommodate digital communications in the 117.975 – 137 MHz band and allow the use of both VDL Mode 2 and VDL Mode 3 *throughout the band without limitation*."[15] The Commission further reiterated that it intended the 136 MHz band to be available for both AOC and ATC communications, concluding that "maintaining the existing allocation will protect ARINC's [now ASRI's] current use of the 136 – 137 MHz frequencies for aircraft operational control communications" without negatively impacting access by the FAA to use the lower channels on a shared basis for air traffic control purposes.[16] The Commission also updated several Part 87 technical rules to enable the deployment of VDLM2 throughout the entire 136 – 137 MHz band.[17]

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[14] *Id.*, ¶ 7. Initially, the FAA had access to 15 channels in the lower 136 MHz band. Subsequently, the FCC provided the FAA with access to 5 additional channels previously held in reserve. *Amendment of Parts 2 & 87 of Commission's Rules to Accommodate Advanced Digital Communications in 117.975-137 MHz Band and to Implement Flight Information Services in 136-137 MHz Band*, Report and Order, 16 FCC Rcd 8226, ¶ 8 (2001) (*"Second 136-137 MHz Order"*).

[15] *Second 136 – 137 MHz Order*, ¶ 14 (emphasis added).

[16] *Id.*, ¶ 9.

[17] These changes included: (i) adding the emissions classes for phase modulation digital data transmission (G1D and G7D) to the list of authorized emissions in the 117.95-137 MHz, 47 C.F.R. § 87.131; (ii) establishing emission tolerances for G1D and G17, *id.* § 87.133; (iii) establishing authorized bandwidth for each G1D emission designator, *id.* § 87.137; and (iv)

In a recent interpretation provided at the request of the FAA, the Commission endorsed the view that transmission of AOC and ATC communications using AES stations fulfills the Commission's intent for this spectrum. Specifically, the Commission agreed that its licensing and service rules are consistent with this practice in the upper 136 MHz band.[18]

As explained in ASRI's petition for rulemaking, Sections 87.173(b) and 87.263(a) of the Commission's rules prevent AOC communications in the lower 136 MHz band and should be harmonized with the FCC's clearly expressed intentions for this band segment. By preventing the implementation of VDLM2 in the lower 136 MHz frequency band, these two provisions effectively undermine the allocation of the band in the Table of Frequency Allocations and frustrate the Commission's stated intentions for how the band should be used.

B. Waiver of Sections 87.173(b) and 87.263(a) Is in the Public Interest.

Grant of the requested waiver would serve the public interest by facilitating the early deployment of advanced aeronautical communications systems, thereby enhancing aviation safety and improving efficiency. Aeronautical communications are evolving, and demand for bandwidth for data communications continues to increase. The FAA and aviation industry have worked side-by-side to meet these challenges, agreeing that operation of Data Comm using AES stations offers the best approach. The FAA estimates that Data Comm will save operators more than $10 billion and the FAA $1 billion in costs over the next 30 years.[19]

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establishing emission limitations for VHF aeronautical and aircraft stations operating with G1D and G17 emissions *id.* § 87.139. *Second 136 – 137 MHz Order*, ¶¶ 4-7.

[18] FAA Request Regarding Aeronautical Enroute Stations and Air Traffic Control, Order, 33 FCC Rcd 6011 (2018).

[19] FAA, Data Comm Facts and Figures, https://www.faa.gov/nextgen/how_nextgen_works/new_technology/data_comm/ (last visited Jan. 2019).

Further, ASRI's use of the lower 136 MHz band spectrum will enable next generation AOC and ATC communications without presenting any threat to the air traffic control system. VDLM2 as implemented in Data Comm prioritizes ATC communications over AOC communications by design, and ASRI seeks a waiver to operate in the band to serve the FAA's operational requirements for nonvoice ATC communications as part of the Data Comm operations in support of NextGen.[20]

Waiver would also serve the public interest by fulfilling the Commission's well-established policy objective to "promote the efficient use of spectrum resources."[21] VDLM2 technology uses spectrum more efficiently by combining AOC and ATC data into a single channel. Should the Commission decide against a waiver for VDLM2 operations in the lower 136 MHz band pending rulemaking, the band segment will be left almost unused while the remaining aeronautical VHF spectrum experiences growing congestion. A waiver would thus fulfill the Commission's policy objectives for the 136 MHz band by putting the full band segment to use providing next generation services to U.S. aviation, as well as fulfill its policy objectives for the use of spectrum more generally.

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[20] The FAA, Harris Corporation, Collins Aerospace, and SITAONAIR have developed a plan that details the use of the 136 – 137 MHz band for the NextGen DataComm program. Changes to the plan are to be approved by the parties in advance of the filing of applications for additional stations. Proposed changes in the plan are also vetted with the Aeronautical Frequency Committee, which is representative of the users of aeronautical spectrum.

[21] *Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, & 101 to Establish Uniform License Renewal, Discontinuance of Operation, & Geographic Partitioning & Spectrum Disaggregation Rules & Policies for Certain Wireless Radio Services*, Second Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 8874, ¶ 5 (2017). *See also, e.g., Vermont Transco LLC*, Order, 26 FCC Rcd 8820, ¶¶ 6-7 (2011) (granting a waiver of certain Part 80 rules to allow the operation of a private land mobile radio system on Automated Maritime Telecommunications System spectrum in part because the requested operations would "promote the efficient use of AMTS spectrum").

C. All Commenters Responding to ASRI's Petition for Rulemaking Agree on the Need to Make Lower 136 MHz Band Spectrum Available for VDLM2.

Over half a dozen key stakeholders in the aviation industry filed comments in support of, and none opposed, ASRI's Petition for Rulemaking to enable use of VDLM2 in the lower 136 MHz band. Commenters agreed on the importance of opening the entire 136 MHz band for the successful implementation of Data Comm and that amendment of Rules 87.173(b) and 87.263(a) is a key requirement to achieve this objective.[22] The commenters also emphasized that VDLM2 technology promises enormous benefits for U.S. aviation, including increased safety and enhanced efficiency.[23] The Air Line Pilots Association, representing the safety interests of over 61,000 pilots flying in the U.S. and Canada, explained for example that VDLM2 improves safety and efficiency greatly by allowing flight crew to review and approve ATC clearances "which can then be quickly loaded into aircraft flight management systems without the possibility of 'readback/hearback' errors, or transcription/typographic errors."[24]

Commenters further agreed that spectrum in the lower 136 MHz band is needed urgently to support growing adoption of Data Comm. Data Comm, which currently supports data

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[22] *See, e.g.*, Reply Comments of Collins Aerospace, RM-11818, at 2 (filed Dec. 4, 2018) ("Initiating a rulemaking to amend Sections 87.173(b) and 87.263(a) of the Commission's Rules to allow use of the lower 136 MHz band by aeronautical enroute stations is timely, necessary, and has been fully vetted and supported by the aviation industry and the FAA."); Comments of The Air Line Pilots Association, International, RM-11818, at 2 (filed Nov. 14, 2018) ("ALPA Comments") ("The ability to use the entire 136-137 MHz band is an essential step in meeting the safety and efficiency benefits. . . .").

[23] *See, e.g.,* Reply Comments of SITAONAIR, RM-11818, at 2 (filed Dec. 4, 2018) ("The addition of the VHF channels that are available in the lower 136 MHz band not only adds additional capacity but, more importantly, greatly simplifies the process of deploying and installing ground stations as well as reducing the possibility of interference."); Reply Comments of United Parcel Service, Inc., RM-11818, at 2 (filed Dec. 4, 2018) ("UPS Reply Comments") ("NextGen promises a long list of public benefits, including increased flight safety, reduced flying time, reduced fuel consumption and reduced emissions").

[24] ALPA Comments, at 2.

transmissions to aircraft on the ground, is scheduled to operate with enroute aircraft nationwide by 2020. Delta Air Lines observed, "Conservative estimates indicate the need to begin implementing this additional capacity by late 2019."[25] Frontier Airlines and others emphasized the need to begin implementation "as early as possible."[26] ASRI agrees with commenters, especially given the timeline for expansion of Data Comm to enroute aircraft, on the urgent need to open the entire 136 MHz band for VDLM2 operations.

III. CONCLUSION

ASRI urges the Commission to grant the waiver requested herein to permit ASRI to obtain AES licenses authorizing VDLM2 stations to operate in the 136.000 – 136.4875 MHz band in support of the Data Comm component of the FAA's NextGen program.

Respectfully submitted,

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[25] Comments of Delta Air Lines, RM-11818, at 1 (filed Nov. 15, 2018).

[26] Comments of Frontier Airlines, RM-11818, at 1 (filed Nov. 16, 2018). *See also* UPS Reply Comments, at 3 ("[A]ny delay beyond the end of 2019 risks postponing the enormous benefits of NextGen").

Appendix A

DataComm Deployment and Effect Through December 2018